

CLAIMS

What is claimed is:

- [c1] 1. A method for a computing system to provide an electronic marketplace for selling and purchasing Web services made available by third-party Web service providers to third-party Web service consumers and for acting as an intermediary to facilitate providing access to the Web services, the method comprising:

for each of multiple of the third-party Web service providers, registering a Web service available from the provider via the electronic marketplace in response to a registration request from the provider, the registration request including an indication of how to invoke the Web service and a specification of use conditions and a use price for use of the registered Web service by third-party Web service consumers;

for each of multiple third-party Web service consumers,

in response to a search request received from the consumer, providing information to the consumer for each of a subset of the registered Web services that includes at least the use prices for those Web services; and

in response to a request received from the consumer to subscribe to an indicated one of the registered Web services, creating the subscription for later use by the consumer if the subscription request satisfies the specified use conditions for the indicated Web service and if the consumer has provided payment for the specified use price for the indicated Web service; and

for each of multiple requests received from third-party consumers to access indicated registered Web services, and if it is determined that the consumer from whom the request is received has a valid subscription for the Web service indicated in the request, satisfying the request by,

interacting with the provider that registered the Web service to invoke the Web service and receive response information, the invoking using the information from the provider that indicates how to invoke the Web service; and

providing to the consumer the received response information, so that third-party Web service providers can register available Web services that have specified use prices and use conditions, and so that third-party Web service consumers can locate and use registered Web services after satisfying use conditions and providing payment information for those Web services.

[c2] 2. The method of claim 1 including, for each of the registered Web services, after obtaining payment from one or more third-party Web service consumers for subscriptions to the registered Web service, providing at least some of the obtained payment for the subscriptions to the third-party Web service provider that registered the Web service.

[c3] 3. The method of claim 1 wherein the providing of payment by the third-party Web service consumers for subscriptions to registered Web services includes receiving indications from the consumers of an obligation to pay the specified use prices for the registered Web services in the future, and including, for each of the Web service consumers, determining a cumulative amount that the consumer is obligated to pay over a specified period of time and obtaining payment from the consumer for the determined cumulative amount.

[c4] 4. The method of claim 1 including, after the registering of a Web service by the provider of the Web service, providing information to the provider about use of the Web service by third-party Web service consumers to allow the provider to monitor the Web service.

[c5] 5. The method of claim 1 including receiving notification requests from one or more of the Web service providers and/or consumers, the notification

requests including notification conditions related to one or more Web services and notification instructions, and providing notifications in accordance with the notification instructions when it is determined that the notification conditions have been satisfied.

- [c6] 6. The method of claim 1 including, after the registering of a Web service by a provider and after invocations of the Web service in accordance with one or more subscriptions for the Web service, receiving throttling instructions from the provider to restrict future invocations of the Web service and denying in response based on the throttling instructions at least some future requests to access the Web service that are received from one or more third-party consumers with valid subscriptions for the Web service.
- [c7] 7. The method of claim 1 including registering a composite Web service based on a request from a user, the composite Web service including a specification of multiple other registered Web services that are provided by third-parties unrelated to the user and of logic indicating how and when to invoke the other registered Web services, such that the satisfying of a request from a third-party Web service consumer other than the user to access the registered composite Web service includes invoking the multiple other Web services in accordance with the specified logic.
- [c8] 8. The method of claim 1 including receiving a request from an external consumer to execute logic specified in the request, the specified logic indicating how and when to invoke multiple registered Web services such that response information from invoking at least one of the registered Web services is to be used as input when invoking another of the registered Web services, and when it is determined to satisfy the request, invoking the multiple Web services and providing response information in accordance with the specified logic.

- [c9] 9. The method of claim 1 wherein the electronic marketplace further employs one or more security mechanisms so that third-party consumers cannot invoke registered Web services without the electronic marketplace acting as an intermediary.
- [c10] 10. The method of claim 1 wherein the subscription for one of the registered Web services that is created by one of the third-party Web service consumers is associated with an application program provided by the consumer to other users that makes use of the Web service during execution, such that a request to access the Web service that is generated by use of the application program by one of the other users is treated as if the request is from the consumer.
- [c11] 11. The method of claim 1 including, when each request is received from a third-party consumer to access an indicated registered Web service, denying that request unless that request satisfies specified use conditions for the indicated Web service and/or payment for that request is obtained based on a specified use price for the indicated Web service.
- [c12] 12. The method of claim 1 including, in response to a request received from a consumer to access an indicated one of the registered Web services without a subscription, performing the satisfying of the request if the request satisfies the specified use conditions for that Web service and if the consumer has provided payment for the specified use price for that Web service.
- [c13] 13. The method of claim 1 wherein the information provided to a consumer for registered Web services includes reviews of the registered Web services by other consumers and recommendations of other registered Web services of potential interest for the consumer.

[c14] 14. The method of claim 1 wherein the electronic marketplace is part of a Web store that offers multiple types of items other than Web services to consumers, and including providing requested items to customers of the Web store when payment for the requested items is obtained from the customers.

[c15] 15. The method of claim 1 including registering multiple Web services that are available from an operator of the electronic marketplace, and wherein the satisfying of requests from third-party consumers to access those Web services includes executing the requested Web services.

[c16] 16. A computer-implemented method for selling access to Web services to Web service consumers who are unrelated to Web service providers who provide those Web services, the method comprising:

in response to registration requests from providers of Web services, registering Web services so as to make access to those Web services available for purchase by unrelated consumers of Web services, the registered Web services each having at least one associated use price;

providing information about the available registered Web services to consumers of Web services;

in response to each of multiple access requests from the consumers, performing a sale to a consumer for access to an indicated one of the registered Web services in exchange for an access fee from the consumer that is based on a use price associated with the indicated Web service;

after each of at least some sales to a consumer for access to a registered Web service, providing to the consumer access to the registered Web service by invoking that Web service from the provider of the Web service on behalf of the consumer and by providing response information from the invoking to the consumer; and

providing payment for each of the registered Web services to the provider of that Web service based on the access fees paid by the consumers for access to that Web service.

- [c17] 17. The method of claim 16 wherein at least some registration requests each received from a Web service provider for a Web service include one or more use conditions that must be satisfied by a consumer desiring access to the Web service, and wherein access to a registered Web service having use conditions is controlled such that access is provided to a consumer only if that access for that consumer satisfies those use conditions.
- [c18] 18. The method of claim 17 wherein the controlling of the access to a registered Web service having use conditions is performed during the performing of a sale to a consumer for access to the registered Web service such that the sale is completed only if that access for that consumer satisfies those use conditions.
- [c19] 19. The method of claim 17 wherein the registration requests further include requests to register composite services that each include accessing multiple other registered Web services, and wherein a composite service is registered only if use of the other registered Web services as part of the composite service satisfies any use conditions associated with those other registered Web services.
- [c20] 20. The method of claim 17 including receiving one or more coordination requests from users that indicate multiple other registered Web services to be accessed as part of satisfying the request, and wherein a coordination request is satisfied only if use of the other registered Web services as part of the coordination satisfies any use conditions associated with those other registered Web services.

- [c21] 21. The method of claim 16 wherein the received access requests and the corresponding performed access sales are each for an access subscription for a consumer to a registered Web service.
- [c22] 22. The method of claim 21 wherein each providing to a consumer of access to a registered Web service is in response to a subscription use request and is performed only if the consumer is determined to have a valid subscription for the registered Web service.
- [c23] 23. The method of claim 21 wherein each performed sale for an access subscription of a consumer to a registered Web service includes providing a unique subscription ID to the consumer for later use with the subscription, and wherein later requests by the consumer for use of the subscription to obtain access to the registered Web service includes providing the subscription ID by the consumer.
- [c24] 24. The method of claim 21 wherein each access subscription provides a specified multiple number of times that access may be provided.
- [c25] 25. The method of claim 21 wherein each access subscription provides a specified period of time during which multiple accesses may be provided.
- [c26] 26. The method of claim 21 wherein at least some of the access subscriptions are each associated with an application specified by the consumer such that users of the application other than the consumer can use the access subscription.
- [c27] 27. The method of claim 21 wherein at least some of the access subscriptions are each associated with one or more affiliates other than the

consumer that are specified by the consumer, such that specified affiliates can use the access subscription.

[c28] 28. The method of claim 21 wherein at least some of the access subscriptions are each for a single immediate access to a registered Web service such that the providing of the access to the consumer occurs in response to the access request that produced the access subscription.

[c29] 29. The method of claim 16 wherein each registration request received from a Web service provider for a Web service includes one or more use prices specified by the provider that are charged by the provider for providing the Web service, and wherein the providing of information to consumers about registered Web services includes providing information about one or more of the use prices for each of those Web services.

[c30] 30. The method of claim 29 wherein each use price for a registered Web service is associated with a type of use of that Web service.

[c31] 31. The method of claim 30 wherein at least some of the registered Web services have multiple associated use prices with distinct associated types of uses.

[c32] 32. The method of claim 30 wherein each of the types of use for a Web service includes a number of times that access is provided and/or a period of time that access is provided.

[c33] 33. The method of claim 29 wherein the access fee for providing access to a registered Web service in accordance with a use price is that use price.

[c34] 34. The method of claim 16 wherein one or more of the use prices associated with each of at least some of the registered Web services are each based on a specified quality of service for providing of that Web service, and wherein the providing to consumers of access to those registered Web services that is purchased based on those use prices is performed in accordance with the specified quality of services for those use prices.

[c35] 35. The method of claim 16 wherein the performing of sales to consumers in exchange for access fees includes tracking the access fees owed for each consumer for a specified period of time and obtaining payment from each consumer after the period of time for a cumulative amount of tracked access fees for the consumer for the period of time.

[c36] 36. The method of claim 16 including, in response to requests from providers of Web services, providing information to each of the providers about use of one or more of the registered Web services of the provider by consumers to allow the provider to monitor use of those Web services.

[c37] 37. The method of claim 16 including, in response to requests from providers of Web services, providing information to each of the providers about a current status of one or more of the registered Web services of the provider to allow the provider to monitor use of those Web services, the provided information based at least in part on invocations of those Web services on behalf of consumers.

[c38] 38. The method of claim 16 including, in response to requests from consumers, providing information to each of the consumers about invocations of one or more Web services performed on behalf of the consumer to allow the consumer to monitor those invocations.

[c39] 39. The method of claim 16 including, in response to requests from consumers who have purchased subscriptions to registered Web services that can be used by others, providing information to each of the consumers about use of one or more of the subscriptions of the consumer by the others to allow the consumer to monitor those subscriptions.

[c40] 40. The method of claim 16 including obtaining information corresponding to privacy preferences of one or more providers of Web services and/or one or more consumers of Web services, and wherein information related to those providers and/or consumers is provided in accordance with those privacy preferences.

[c41] 41. The method of claim 16 including receiving notification requests from providers of Web services that each specify one or more notification conditions related to one or more registered Web services of the provider from whom the notification request is received, and when the specified notification conditions for a notification request are determined to have been satisfied, notifying the provider of that notification request in accordance with that notification request.

[c42] 42. The method of claim 16 including receiving notification requests from consumers of Web services that each specify one or more notification conditions related to one or more Web services, and when the specified notification conditions for a notification request are determined to have been satisfied, notifying the consumer that provided that notification request in accordance with that notification request.

[c43] 43. The method of claim 16 including, after the registering of a Web service by a provider and after invocations of the Web service on behalf of consumers, receiving throttling instructions from the provider to restrict future

invocations of the Web service and in response restricting at least some future invocations of the Web service.

[c44] 44. The method of claim 43 wherein the restricting of future invocations of the Web service includes denying at least some access requests received from consumers for the Web service.

[c45] 45. The method of claim 43 wherein the restricting of future invocations of the Web service includes declining to provide access to the Web service to one or more consumers that had previously provided access fees as part of performed sales for access to the Web service.

[c46] 46. The method of claim 43 wherein the throttling instructions correspond to a temporary restricting of future invocations of the Web service.

[c47] 47. The method of claim 16 including, after the performing of a sale to a consumer for access to a Web service but before completing the providing of the sold access, receiving throttling instructions from the consumer to restrict future providing of the sold access and in response restricting at least some future invocations of the Web service on behalf of the consumer.

[c48] 48. The method of claim 16 including receiving throttling instructions for a Web service to restrict at least some future invocations of the Web service and in response restricting at least some future invocations of the Web service in accordance with the received throttling instructions, the throttling instructions based at least in part on one or more of an IP address associated with the Web service, an IP address associated with a consumer from whom a request for access to the Web service is received, an identifier associated with a subscriber having a subscription on which a request for access to the Web service is based, an identifier associated with a consumer from whom a request for access to the

Web service is received, an identifier associated with a transaction to purchase access to the Web service, a URI associated with a request to access the Web service, and points used to obtain access to the Web service.

[c49] 49. The method of claim 16 including registering a composite Web service that indicates multiple other registered Web services based on a registration request received from a user, and providing access to a consumer to the composite Web service by invoking the multiple other Web services and by providing to the consumer response information from one or more of the invocations.

[c50] 50. The method of claim 49 wherein the composite Web service includes logic indicating how and when to invoke the other registered Web services, and wherein the invoking of the multiple other Web services is performed in accordance with the logic.

[c51] 51. The method of claim 49 wherein the multiple other Web services are provided by providers unrelated to the user.

[c52] 52. The method of claim 49 wherein the registered composite Web service has at least one associated use price, and including providing payment to the user based on access fees paid by consumers for access to the registered composite Web service.

[c53] 53. The method of claim 16 including receiving an coordination request from a user that indicates multiple registered Web services, and satisfying the coordination request by invoking the multiple Web services and by providing response information from one or more of the invocations.

- [c54] 54. The method of claim 53 wherein the coordination request includes logic indicating how and when to invoke the registered Web services, and wherein the invoking of the multiple Web services is performed in accordance with the logic.
- [c55] 55. The method of claim 53 wherein the multiple Web services are provided by providers unrelated to the user.
- [c56] 56. The method of claim 53 wherein the satisfying of the coordination request is performed in exchange for receipt of a coordination fee.
- [c57] 57. The method of claim 53 wherein the coordination request is provided by the user on behalf of a customer of the user as a service to the customer.
- [c58] 58. The method of claim 16 wherein the providing to consumers of access to registered Web services is performed in such a manner that the consumers are prevented from directly invoking the registered Web services.
- [c59] 59. The method of claim 58 wherein the preventing of consumers from directly invoking registered Web services includes obfuscating information about how to invoke the registered Web services in information made available to the consumers.
- [c60] 60. The method of claim 58 wherein the preventing of consumers from directly invoking registered Web services includes employing one or more security mechanisms that prevent access to a registered Web service unless the access is on behalf of a consumer for whom a sale for access to the Web service has been performed and before completing of the providing of the sold access.

[c61] 61. The method of claim 16 wherein the information provided to at least some of the consumers about the registered Web services is in response to search requests received from the consumers.

[c62] 62. The method of claim 16 including categorizing the registered Web services based on types of response information provided by the registered Web services, and wherein the information about registered Web services that is provided to consumers having a potential interest in a type of response information includes information about at least some of the registered Web services that are categorized based on that type of response information.

[c63] 63. The method of claim 16 including categorizing the registered Web services based on types of processing performed by the registered Web services, and wherein the information about registered Web services that is provided to consumers having a potential interest in a type of processing includes information about at least some of the registered Web services that are categorized based on that type of processing.

[c64] 64. The method of claim 16 including categorizing the registered Web services based on manners of invoking the registered Web services, and wherein the information about registered Web services that is provided to consumers having a potential interest in a manner of invoking Web services includes information about at least some of the registered Web services that are categorized based on that manner of invoking.

[c65] 65. The method of claim 16 wherein the information about registered Web services provided to a consumer includes recommendations of registered Web services that are personalized for the consumer based on identified potential interests of the consumer.

- [c66] 66. The method of claim 16 wherein the information about registered Web services provided to a consumer includes recommendations of registered Web services based on other consumers having expressed interest in those recommended Web services.
- [c67] 67. The method of claim 16 wherein the information about registered Web services provided to consumers includes reviews of the registered Web services by other consumers.
- [c68] 68. The method of claim 16 wherein the information about registered Web services provided to consumers includes ratings of the registered Web services by other consumers.
- [c69] 69. The method of claim 16 wherein the information about registered Web services provided to consumers includes indications of amount of usage of the registered Web services by other consumers.
- [c70] 70. The method of claim 16 wherein the method is performed by a Web store, and wherein the information about registered Web services that is provided to consumers is provided in multiple Web pages that are each specific to one of the registered Web services and that include at least descriptive information for that Web service that was provided by the provider of that Web service.
- [c71] 71. The method of claim 70 wherein the Web store further sells items other than Web services.
- [c72] 72. The method of claim 16 including, before the providing of response information from the invoking of Web services to consumers, formatting the response information.

[c73] 73. The method of claim 72 wherein the formatting of the response information for a consumer is performed in a manner specific to that consumer.

[c74] 74. The method of claim 72 wherein the formatting of the response information for a consumer is performed based at least in part on preferences previously specified for that consumer.

[c75] 75. The method of claim 72 wherein the formatting of the response information from the invoking of a Web service for a consumer is performed in a manner so as to obfuscate to the consumer information regarding the invoking.

[c76] 76. The method of claim 72 wherein the formatting of the response information from the invoking of a Web service for a consumer is performed in a manner so as to obfuscate to the consumer information regarding the provider of the Web service.

[c77] 77. The method of claim 16 wherein the providing to consumers of at least some of the access to registered Web services includes retrieving from a cache response information corresponding to prior invocations of those Web services, and wherein the retrieved response information is the response information provided to those consumers for that access.

[c78] 78. The method of claim 16 wherein the providing to consumers of at least some of the access to registered Web services includes receiving requests from those consumers for access to those Web services and in response obtaining the response information to be provided to the consumers from the providers of those Web services by performing the invoking of those Web services.

- [c79] 79. The method of claim 16 including selling points to a consumer for later use in purchasing access to one or more registered Web services, the points not specific to any of the registered Web services, and wherein multiple later sales to the consumer for access to multiple of the registered Web services are performed based on indications from the consumer to use the points to pay the access fees corresponding to those sales.
- [c80] 80. The method of claim 79 wherein the points sold to the consumer are not specific to any provider of Web services, such that the multiple registered Web services for the later sales are provided by multiple unrelated providers.
- [c81] 81. The method of claim 16 wherein the method is performed by an organization unrelated to the consumers and the providers other than as customers and suppliers for the organization.
- [c82] 82. The method of claim 81 including registering one or more Web services provided by the organization and providing access to consumers to those Web services.
- [c83] 83. The method of claim 81 including purchasing access for the organization to one or more registered Web services and obtaining the purchased access by invoking those Web services on behalf of the organization.
- [c84] 84. The method of claim 16 including storing at least some of the response information received from invoking of Web services on behalf of consumers, and after some sales to consumers for access to registered Web services, providing to the consumers access to those registered Web services by

providing stored response information to the consumers without invoking those Web services.

[c85] 85. A computer-readable medium whose contents cause a computing system to make Web services from Web service providers available to third-party Web service consumers, by performing a method comprising:

providing information to consumers about Web services available from third-party providers;

after each of multiple access requests that are each from a consumer for access to an indicated one of the available Web services, providing access to the indicated Web service to the consumer for an access fee based on a use price associated with the indicated Web service, the providing of the access including invoking the indicated Web service from the provider of the Web service for the consumer; and

providing payment to the providers of the invoked Web services based on the use prices associated with those Web services.

[c86] 86. The computer-readable medium of claim 85 wherein the computer-readable medium is memory of a computing system.

[c87] 87. The computer-readable medium of claim 85 wherein the computer-readable medium is a data transmission medium transmitting a generated data signal containing the contents.

[c88] 88. The computer-readable medium of claim 85 wherein the contents are instructions that when executed cause the computing system to perform the method.

[c89] 89. The computer-readable medium of claim 85 wherein the contents include one or more data structures comprising multiple entries that each

correspond to one of the available Web services that has been registered by the third-party provider from whom the Web service is available, at least some of the entries including at least one use price and at least one use condition.

[c90] 90. The computer-readable medium of claim 85 wherein the contents include one or more data structures comprising multiple entries that each correspond to a subscription purchased by a consumer to one of the registered Web services, each of the entries including criteria indicating whether an attempted use of the subscription for an access of the registered Web service is valid.

[c91] 91. A computing device configured to provide to Web service consumers access to Web services from third-party Web service providers, comprising:

one or more storage devices configured to store information about Web services registered by third-party providers so as to make access to those Web services available for purchase by third-party consumers of Web services, the stored information including at least one associated use price and one or more use conditions for each of the registered Web services; and

one or more memories configured with executable instructions to repeatedly sell to consumers access to indicated registered Web services in exchange for access fees based on the use prices associated with the indicated Web services if the access satisfies the use conditions for the indicated Web services, to repeatedly provide to the consumers the sold access to the registered Web services by invoking those Web services from the providers of the Web services on behalf of the consumers, and to provide payment to the providers of the registered Web services based on the access sold to the consumers for those Web services.

[c92] 92. The computing device of claim 91 wherein the executable instructions include a Web Services Marketplace system executing in the memories of the computing device.

[c93] 93. The computing device of claim 91 wherein the executable instructions are part of one or more means for repeatedly selling to consumers access to indicated registered Web services, for repeatedly providing to the consumers the sold access, and for providing payment to the providers of the registered Web services.